REMARKS

Claims 7, 19, 20, 32, 44, 45, 52, 54, 46 and 60 are canceled. Claims 1-6, 8-18, 21-31, 33-43, 46-41, 46-51, 53, 55, 57-59 are pending in the present application.

Claims 1, 2, 4, 5, 8, 9, 11, 13-18, 24-27, 29, 30, 33, 34, 35, 38-41, 43, 36, 37, 39, 50, 53, 55 and 57-59 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,503,780 ("Glenn '780") in view of U.S. Patent Application Publication No. 2002/0057468 ("Segawa"). Applicant respectfully traverses this rejection.

Claim 1 recites a microelectronic imaging unit, comprising, *inter alia*, "a microelectronic die including an image sensor, . . . a cover unit over the image sensor, . . . and an optics unit having a substrate and an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die." Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest these limitations of claim 1.

Glenn '780 discloses that a "package body 1418 encloses sides 102S of image sensor 102, . . . and window support 108." Col. 20, lines 44-46; Fig. 14. Glenn '780 further discloses that "package body 1418, in combination with window support 108, mechanically locks window 110 in place." Col. 20, lines 46-49; Fig. 14. Glenn '780 is entirely silent on "an optics unit having an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die," as recited in claim 1.

By contrast, Segawa discloses a module substrate 1 having a signal processing IC 2 on one side and a "photoelectric conversion module 6 having a flexible board 8, the bare chip of a photoelectric conversion element 7, and an optical glass plate

11" on the other side. Paragraphs [0028-0030]; Figs. 1 and 2. Segawa discloses an opening in "flexible board 8 that is sandwiched between the optical glass plate 11 and the photoelectric conversion element 7" and that "photoelectric converstion part 7a of the photoelectric conversion element 7 is arranged so as to face this opening." Paragraph [0032]; Fig. 2. Segawa further discloses that "optical glass plate 11 is fixed to the surface of the flexible board 8, which faces away from the photoelectric conversion element 7." Id. Segawa discloses that "a connector 12 of surface-mount type is mechanically fixed to the electrodes provided on the module board 1." Paragraph [0034]; Fig. 2. Segawa also discloses that "lens holder 13 holds a lens 5" and that the lens holder is a "hollow cylinder that serves as a lens-barrel 18 for the lens" which is "forms a socket 19 and is engaged with the connector 12." Paragraph [0035]; Fig. 2. Segawa does not teach or suggest providing the optical glass plate 11 with a cover unit, or package body as disclosed in Glenn '780, much less attaching the lens holder 13 to such a cover unit. Hence, Segawa, like Glenn '780, does not teach or suggest "an optics unit having an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die," as recited in claim 1.

Furthermore, because the Segawa structure mounts an optical glass plate 11 directly on the photoelectric conversion module 6 rather than a package body having a window support, one of ordinary skill in the art would not have been motivated to combine the teachings of Segawa with Glenn '780 to obtain "an optics unit having an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die," as recited in claim 1.

Even assuming, *arguendo*, that motivation exists to combine Glenn '780 and Segawa (which it does not), the references do not teach or suggest all the limitations of the claimed invention. As discussed above, neither Glenn '780 nor Segawa teach or suggest "an optics unit having an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die," as recited in claim 1.

Since Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of independent claim 1, claim 1 and claims 2, 4, 5, 8, 9, 11, 13 and 14 depending therefrom are patentable over the references.

Claim 15 recites limitations similar to claim 1, including a microelectronic imaging unit, comprising, *inter alia*, "a microelectronic die including an image sensor, . . . ; a cover unit over the image sensor, the cover unit having a window and a side member projecting from the window, the side member being attached to the die; electrically conductive interconnects electrically coupled to corresponding terminals . . .; and an optics unit having an optic member attached to the cover unit, wherein the optics unit is integral with the window and the optic member has a first side in contact with the window and a second side located between the first side and the microelectronic die."

For similar reasons as discussed above regarding the patentability of claim 1 over Glenn '780 and Segawa, Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of claim 15. Specifically, Glenn '780 and Segawa do not teach or suggest "an optics unit having an optic member attached to the cover unit, wherein the optics unit is integral with the window and the optic member has a first side in contact with the window and a second side located between the first side and the microelectronic die," as recited in claim 15.

Since Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of independent claim 15, claim 15 and claims 16-18, 24 and 25 depending therefrom are patentable over the references.

Claim 26 recites limitations similar to claims 1 and 15, including a microelectronic imaging unit, comprising, *inter alia*, "a microelectronic die . . .; an image sensor on the first side of the die; an integrated circuit in the die and electrically coupled to the image sensor; . . . a cover unit over the image sensor, the cover unit being a single, unitary component having a window and a side member projecting from the window, and the side member being attached to the die; . . . and an optics unit having a substrate and an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die."

For similar reasons as discussed above regarding the patentability of claims 1 and 15 over Glenn '780 and Segawa, Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of claim 26. Specifically, Glenn '780 and Segawa do not teach or suggest "an optics unit having a substrate and an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die," as recited in claim 26.

Since Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of independent claim 26, claim 26 and claims 27, 29, 30, 33, 34, 36, 38 and 39 depending therefrom are patentable over the references.

Claim 40 recites limitations similar to claims 1, 15 and 26, including a plurality of microelectronic imagers, comprising, *inter alia*, "a microfeature workpiece

including a plurality of microelectronic dies, the individual dies having an image sensor, an integrated circuit electrically coupled to the image sensor, and a plurality of bond-pads electrically coupled to the integrated circuit." Claim 40 further recites "a plurality of cover units over corresponding image sensors, the cover units being single, unitary components having a window and a side member integral with and projecting from the window, the individual side members being attached to corresponding individual dies; . . . and a plurality of optics units, each corresponding to one of the plurality of cover units, each having an optic member attached to the corresponding cover unit, wherein the individual optics units are integral with the respective windows, each optic member having a first side in contact with the window and a second side located between the first side and the corresponding microelectronic die."

For similar reasons as discussed above regarding the patentability of claims 1, 15 and 26 over Glenn '780 and Segawa, Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of claim 40. Specifically, Glenn '780 and Segawa do not teach or suggest "a plurality of optics units, . . ., each having an optic member attached to the corresponding cover unit, wherein the individual optics units are integral with the respective windows, each optic member having a first side in contact with the window and a second side located between the first side and the corresponding microelectronic die," as recited in claim 40.

Since Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of independent claim 40, claim 40 and claims 41 and 43 depending therefrom are patentable over the references.

Claim 46 recites limitations similar to claim 1, including a method of packaging a microelectronic imager, comprising, *inter alia*, "providing a microelectronic die having an image sensor . . .; providing a cover unit having a window and a side

member projecting from and integral with the window; attaching the cover unit to the die over the image sensor; . . . and attaching an optics unit having an optic member to the cover unit, wherein optics unit is integral with the window and the optic member is formed with a first side in contact with the window and a second side located between the first side and the microelectronic die."

For similar reasons as discussed above regarding the patentability of claim 1 over Glenn '780 and Segawa, Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of claim 46. Specifically, Glenn '780 and Segawa do not teach or suggest "attaching an optics unit having an optic member to the cover unit, wherein optics unit is integral with the window and the optic member is formed with a first side in contact with the window and a second side located between the first side and the microelectronic die," as recited in claim 46.

Since Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of independent claim 46, claim 46 and claims 47, 49, 50, 53 and 55 depending therefrom are patentable over the references.

Claim 57 recites limitations similar to claims 40 and 46, including a method of packaging a plurality of microelectronic imagers, comprising, *inter alia*, "providing a microfeature workpiece including a plurality of microelectronic dies, the individual dies having an image sensor, an integrated circuit electrically coupled to the image sensor, . . .; providing a plurality of cover units, the cover units being single, unitary components having a window and a side member; attaching individual cover units to individual dies over corresponding image sensors; . . . and attaching a plurality of optics units having a substrate and an optic member to corresponding individual cover units, wherein each of the optic members has a first side in contact with the individual

substrate and a second side located between the first side and the corresponding microelectronic die."

For similar reasons as discussed above regarding the patentability of claims 1 and 46 over Glenn '780 and Segawa, Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of claim 57. Specifically, Glenn '780 and Segawa do not teach or suggest "attaching a plurality of optics units having a substrate and an optic member to corresponding individual cover units, wherein each of the optic members has a first side in contact with the individual substrate and a second side located between the first side and the corresponding microelectronic die," as recited in claim 57.

Since Glenn '780 and Segawa, whether considered alone or in combination, do not teach or suggest all the limitations of independent claim 57, claim 57 and claims 58 and 59 depending therefrom are patentable over the references.

Accordingly, Applicant respectfully requests that the 35 U.S.C. § 103(a) rejection of claims 1, 2, 4, 5, 8, 9, 11, 13-18, 24-27, 29, 30, 33, 34, 35, 38-41, 43, 36, 37, 39, 50, 53, 55 and 57-59 be withdrawn.

Claims 3, 6, 28, 31, 42, 48 and 51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Glenn '780 in view of Segawa, and further in view of U.S. Patent No. 6,734,419 ("Glenn '419"). Applicant respectfully traverses this rejection.

Claims 3, 6, 28, 31, 42, 48 and 51 depend from claims 1, 15, 26, 40 and 46, respectively. As discussed above, Glenn '780 and Segawa do not teach or suggest the all the limitations of claims 1, 15, 26, 40 and 46.

Glenn '416 does not supplement the inadequacy of Glenn '780 and Segawa. Glenn'416 discloses a "method for forming an image sensor assembly" which includes "forming a lead frame or Land Grid Array integrally into a molded image sensor die package so that the lead frame or LGA is fully supported and structurally fortified by the molded image sensor die package." Abstract. Glenn '416 discloses that a base 103 and a lens housing 105 with an optical element 107 is provided over a lead frame 109 and an image sensor die 111.

However, Glenn '416, like Glenn '780 and Segawa, does not teach or suggest providing "an optics unit having an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die," as recited in claim 1. Similarly, Glenn '416 does not teach or suggest "an optics unit having an optic member attached to the cover unit, wherein the optics unit is integral with the window and the optic member has a first side in contact with the window and a second side located between the first side and the microelectronic die," as recited in claim 15, or "an optics unit having a substrate and an optic member attached to the cover unit, wherein the optic member has a first side in contact with the substrate and a second side located between the first side and the microelectronic die," as recited in claim 26. Glenn '416 also does not teach or suggest "a plurality of optics units, . . ., each having an optic member attached to the corresponding cover unit, wherein the individual optics units are integral with the respective windows, each optic member having a first side in contact with the window and a second side located between the first side and the corresponding microelectronic die," as recited in claim 40, or "attaching an optics unit having an optic member to the cover unit, wherein optics unit is integral with the window and the optic member is formed with a first side in contact with the window

and a second side located between the first side and the microelectronic die," as recited in claim 46.

Since Glenn '780, Segawa and Glenn '416 do not teach or suggest all the limitations of independent claims 1, 15, 26, 40 and 46, claims 3, 6, 28, 31, 42, 48 and 51 depending therefrom are patentable over the references. Accordingly, Applicant respectfully requests that the 35 U.S.C. § 103(a) rejection of claims 3, 6, 28, 31, 42, 48 and 51 be withdrawn.

Claims 10, 12, 21-23, 35 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Glenn '780 in view of Segawa and further in view of U.S. Patent No. 5,753,857 ("Choi"). Applicant respectfully traverses this rejection.

Claims 10, 12, 21-23, 35 and 37 depend from claims 1, 15 and 26, respectively. As discussed above, Glenn '780 and Segawa do not teach or suggest the all the limitations of claims 1, 15 and 26.

Choi does not supplement the inadequacy of Glenn '780 and Segawa. Choi discloses that "a glass lid 16 is attached by an adhesive 15 to the upper surface of the body 10 so as to cover the large hole." Col. 2, lines 40-41; Fig. 2. Choi further discloses that the body 10 is turned over so as to have the upper surface of the glas lid 16 face downward and that the package chip is inserted inot the large hole formed in the plastic body 10, with the chip pads and a "light receiving area 17a facing downward," mounted on "fingers 13b extending from the outer prtion 13a of the plate 13." Col. 2, lines 42-48; Figs. 2, 3. However, Choi is entirely silent on "an optics unit having a substrate and an optic member attached to the cover unit," as recited in claims 1 and 26. Choi is also silent on "an optics unit having an optic member attached to the cover unit, wherein the optics unit is integral with the window and the optic member has a first

side in contact with the window and a second side located between the first side and the microelectronic die," as recited in claim 15.

Since Glenn '780, Segawa and Choi do not teach or suggest all the limitations of claims 1, 15 and 26, claims 10, 12, 21-23, 35 and 37 depending therefrom are patentable over the references. Accordingly, Applicant respectfully requests that the 35 U.S.C. § 103(a) rejection of claims 10, 12, 21-23, 35 and 37 be withdrawn.

In view of the above amendment, Applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By _____

Thomas J. D'Amico
Registration No.: 28,371
DICKSTEIN SHAPIRO LLP
1825 Eye Street, NW
Washington, DC 20006-5403
(202) 420-2200
Attorney for Applicant